

What is claimed is:

1. A hinge assembly structure for opening and closing of a door in a storage facility comprising:

- 5 a main body provided with a storage room;
a door opening and closing the storage room on the upper portion of the main body;
a hinge assembly connecting the door rotatably with the main body; and
a hinge receptacle accommodating the hinge assembly,

wherein the hinge receptacle comprises: an upper hinge receptacle which is
10 integrally formed on the rear surface of the door; and a lower hinge receptacle which is
integrally formed on the upper surface of the main body and engaged opposingly with the
upper hinge receptacle, and

wherein the hinge assembly comprises: a fixing member which is provided with
passive rotators on the inner circumferential surfaces of both ends and a throughhole
15 penetrating the passive rotators at the center thereof, and which fixedly rotates during
rotation according to opening and closing of the door; a plurality of rotating members each
which is provided with a rotator engaged opposingly with the passive rotator of the fixing
member in one end, and a throughhole penetrating the central portion of the rotating
members, and which convert a rotational movement into a rectilinear movement during
20 rotating according to opening and closing of the door; a plurality of elastic members each
which is installed in opposition to the rotator of the rotating member accommodated in the
passive rotator, and repeats elastic compression and restoration according to the left and
right rectilinear movement of the rotating members; and a fixed shaft which is penetrated
and inserted into the throughhole of the rotating members and fixing member, and then
25 taking hold of both ends of the plurality of elastic members to thereby restrict and fix the
movement, in which the hinge assembly is inserted into and installed in the hinge
receptacle via one side thereof.

2. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 1, wherein couplers are formed on each outer circumstantial surface of the fixing member and the rotating members and wherein coupling guiders which are engaged with the couplers in opposition thereto are formed on each of the upper and lower hinge receptacles.

3. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 2, wherein if the couplers are formed in the form of a rib which is protruded elongatedly in the axial direction, the coupling guiders are formed in the form of a groove which is concave elongatedly in the axial direction, and if the couplers are formed in the form of a groove which is concave elongatedly in the axial direction, the coupling guiders are formed in the form of a rib which is protruded elongatedly in the axial direction.

4. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 3, wherein if the couplers are formed in the form of a groove, a stopper having the same shape as that of the coupler is formed on each of the outer circumstantial surfaces of the rotating members.

5. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 3, wherein if the couplers are formed in the form of a rib, a stopper having the same shape as that of the coupler is formed on the outer circumstantial surface of the fixing member.

6. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 1, wherein the rotator and the passive rotator have a horizontally truncated surface which is formed in the axial direction so that the rotator and the passive rotator are rotatably engaged in a surface-to-surface contacting manner and a spirally

sloped surface which is formed with a slope in the axial direction from the leading end of the horizontally truncated surface, respectively in which the horizontally truncated surface and the spirally sloped surface are formed in opposition to each other.

5 7. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 6, wherein a sloped section which is sloped in the vertical direction with respect to the horizontally truncated surface from the leading end of the horizontally truncated surface is formed in opposition to each other between the horizontally truncated surface and the spirally sloped surface in each of the rotator and the
10 passive rotator.

8. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 7, wherein a plurality of the horizontally truncated surfaces and the spirally sloped surfaces are formed in a 180°symmetrical structure in each of the rotator
15 and the passive rotator, so that the horizontally truncated surface and the spirally sloped surface are formed in opposition to each other around the respective central throughhole.

9. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 5, wherein an oil supply groove which temporarily stores and
20 supplies lubricant oil is formed on the throughhole in the rotating member.

10. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 5, wherein a plurality of grooves are formed on the outer circumstantial surface of the fixing member, via a partial surface removal work.

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11. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 5, wherein the lower hinge receptacle is integrally formed at the

central portion between the upper surface of the main body and the storage room, the upper hinge receptacle is integrally formed on the rear surface of each of the plurality of doors, and the auxiliary supporter is integrally formed at each end of the upper surface of the main body so that the auxiliary supporter is positioned at either side of the upper hinge
5 receptacle, to thereby enable a plurality of doors to be installed by using a single hinge assembly in which the rotating member is installed in and assembled with both ends of the fixing member.

12. The hinge assembly structure for opening and closing of a door in a storage
10 facility according to claim 1, wherein a fixing cap is provided to block one side of the hinge receptacle into which the hinge assembly is inserted.

13. The hinge assembly structure for opening and closing of a door in a storage facility according to claim 1, wherein a plurality of upper hinge receptacles are formed, into
15 which a plurality of the rotating members are inserted, and a lower hinge receptacle is integrally formed, at both sides of which a plurality of auxiliary supporters are formed respectively, and the fixing member is inserted into the lower hinge receptacle.

14. The hinge assembly structure for opening and closing of a door in a storage
20 facility according to claim 1, a plurality of lower hinge receptacles are formed, into which a plurality of the rotating members are inserted, and an upper hinge receptacle is integrally formed, into which the fixing member is inserted.